

Claims:

1. A method of improving frequency spectrum deployment in a cellular wireless communications system having multiple adjacent cells which provide service to a geographic area, each cell having a base station with a sectored antenna for bi-directional communication with customer premise equipment located in sectors of said cells, the base stations in adjacent cells being arranged in a grid configuration, the method comprising:

selecting at least one frequency set for upstream and downstream communication between said base stations and said customer premise equipment;

10 employing polarization diversity between communications in adjacent sectors; and rotating the sectors in each cell such that dividing lines between sectors are off-set relative to the grid configuration by a configurable angle.

2. The method as defined in claim 1 wherein each cell is divided into four sectors and each base station sectored antenna covers a nominal sector of 90°.

3. The method as defined in claim 2 wherein said configurable angle is in the range $\pm 17.5^\circ$ to $\pm 27.5^\circ$.

4. The method as defined in claim 3 wherein said configurable angle is $\pm 22.5^\circ$.

5. The method as defined in claim 1 wherein there are four cells arranged in a two by two grid configuration and the configurable angle is $\pm 22.5^\circ$.

6. The method as defined in claim 1 wherein there are nine cells arranged in a three by three grid configuration.

7. The method as defined in claim 6 wherein one or more interference slivers are identified in which a carrier to interference ratio (C/I) required to satisfy a service criteria is not achieved.

8. The method as defined in claim 7 wherein a separate frequency set is used to provide service to said one or more slivers.

9. The method as defined in claim 7 wherein no service is provided to said one or more slivers.

10. The method of claim 1 wherein there are sixteen cells arranged in a four by four grid configuration.

11. The method of claim 10 wherein multiple clusters of four by four grid configurations are employed.

12. A system for improving frequency spectrum deployment in a cellular wireless communications system having multiple adjacent cells to provide communications service to a geographic area, the system comprising:

a base station in each cell having a sectored antenna for providing bi-directional communication with customer premise equipment (CPE) located in sectors of said cells, the base stations in adjacent cells being arranged in a grid configuration;
a directional antenna at each CPE for receiving downstream communication from said base station and transmitting upstream communication to said base station
means to select at least one frequency set for upstream and downstream communication between said base stations and said customer premise equipment;

means to employ polarization diversity between communications in adjacent sectors;
and
means at said base station to configure the sectors in each cell such that nominal
dividing lines between sectors are off-set relative to the grid configuration by a
configurable angle.

13. The system as defined in claim 12 wherein said off-set is $\pm 22.5^\circ$.

14. The system as defined in claim 12 wherein each sectored antenna subdivides
each cell into four substantially equal sectors.

15. The system as defined in claim 12 comprising four cells in a two by two grid
configuration.